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EDITORIAL NOTES

MINISTRY OF FUEL

DISCUSSION in our columns of the prospects opened by the formation of the Ministry of Fuel has been limited by our natural concentration on the immediate technical problems of our own Industry as focused in the proceedings of the I.G.E. However, it behoves us to watch carefully any developments. If we are at all cynically inclined, it is impossible to avoid a strong suspicion that the formation of a new Ministry at just the present juncture was due to the need to satisfy a vague political and Press clamour for action of some kind or another rather than to any genuine hope of thereby improving the immediate fuel outlook. It was, indeed, a startling example of changing horses in the midst of a very turbulent stream. At the same time, it need certainly not *impair* the efficiency of the fuel industries, and we believe that in Major Lloyd George we have the type of Minister who will see that it does not do so. But whether or not the new arrangement can be of any succour in the immediate very serious problems which face us, we must inevitably regard the Ministry of Fuel as the likely organizer of the national fuel policy of the future, with the interests of our own Industry very largely in its hands. The occasion is, therefore, once again one for regret that our own unity and organization have never been brought to a higher degree of development, and it should at the same time be a spur to those who are planning our internal re-organization to speed their deliberations. It is an occasion also for thankfulness that the Directorship of Gas Supply was formed last year, and takes its place within the new Ministry already endowed with authority which the Board of Trade originally granted it by right, and which the Director-General and his team have enhanced by the excellent practical results they have already achieved. At the same time none of us must ever lose sight of the fact that re-organization, to give the Gas Industry its maximum usefulness and strength, can only come from within, and the true function of authority must be to implement reforms which the Industry plans and genuinely desires for itself.

It is easier, and probably more profitable at the present time, to speculate in such general terms than to attempt any detailed examination of possibilities. With coal, gas, electricity, and oil, each with its own existing organization, gathered metaphorically under one roof, surely the setting is as near perfection as possible for the eventual evolution of a truly national fuel policy. Day to day problems may be too urgent to allow of much early progress in this direction, but it is easy to picture the council of four sitting under an independent chairman, and gradually blending their hitherto diverse and individual interests into a scheme which would embrace only the interests of the nation and the best use of its natural resources.

If this ideal is to be achieved, however, it is essential that the "big four," if we may use a term which has been popularized in recent years, shall start all on equal footing. As long ago as Nov. 19, discussing the possibility of a Fuel Ministry very much in the abstract, we ventured on a warning. "Coal," we wrote, "is the only fuel industry which so far has had a full-blown Ministry of its own. It might possibly occur to the Government that they possess therein the ready-made beginnings of a Ministry of Fuel, into which gas, electricity, and the rest could readily be drawn—and perhaps submerged. It is true that we others are dependent upon coal entirely for our existence, but the fact remains that we have also built up very definitely separate industries, and we should no more be *subservient* to the coal industry than should the railways or shipping." This whole line of thought is strengthened, of course, by the fact that the Ministry of Mines, in its comparatively short lifetime, faced it is true by obstruction on an unprecedented scale, never gained prestige from its efforts to solve the problems presented to it. But the unanswerable argument against any preponderance of coal, *qua* coal, interests in the fuel counsels of the future is that everything depends upon the provision of suitable fuel in abundance for all domestic and industrial requirements, the achievement of which, in these enlightened days, clearly hinges mainly on an extension of coal processing. We do not suggest that anything of the kind is happening, but we do feel it opportune to emphasize that the Gas Industry, for one, would never be satisfied if it felt that the Ministry of Fuel was merely a new name for the Ministry of Mines from which, in days gone by, it often received a raw deal, quite unjustified by any but purely sectional interests.

LEEDS UNIVERSITY

LAST week we had a few comments on the first of the Papers comprising Institution Communication No. 248, that dealing with the policy and scope of the Gas Research Board; to-day we turn to the last Paper of the Communication, that by Professor D. T. A. Townend on University Training and the Gas Industry. These two contributions we regard as complementary, though we do not intend at the moment to discuss this relationship on broad lines. What we have to say will be confined to Professor Townend's statement in his Paper that the Livesey Advisory Committee had recommended the establishment of a four-year course in chemical engineering in the Fuel Department of Leeds University as an alternative to the long-established course leading to the B.Sc. degree in Gas Engineering. Since the Institution meeting we have received intimation that the Senate and Council of the University have approved this recommendation of the Committee, which is composed of representatives of The Institution of Gas Engineers, the Society of British Gas Industries, and the University. The establishment of the new degree course in chemical engineering is now a *fait accompli*.

This is not the result of sudden thought or hasty action; on the contrary, it is a move which has been contemplated for many years, as past volumes of the "JOURNAL" show well enough. The need for expansion of the Fuel Department's activities was felt before 1935, and there could in fact be little quarrel with the view that the Department's curriculum could be regarded as that of a specialized branch of chemical engineering. In the report of the Livesey Professor for 1935–36 attention was drawn to the growing opinion in the various departments of applied chemistry and engineering in the University that systematic training in chemical engineering should be introduced as a subject of study. Professor J. W. Cobb, during his tenure of the Livesey Professorship, referred to the matter on several occasions. When Professor Cobb retired in 1938 Dr. Townend was appointed to succeed him in the Chair, and shortly after his appointment we had a talk to him about this matter and other questions, and we recorded our conversation in the "JOURNAL" of Jan. 4, 1939. We may recall that on his arrival at Leeds one of Professor Townend's first impressions was the extent to which the work of the Fuel Department lies outside its four walls, and how far it depends on close collaboration with other departments in the University, and at the time he expressed the hope that the teaching work of the Fuel Department would widen so as to include fourth year courses in such subjects as plant design generally, high-pressure gas reactions, and oil technology, believing that the training of men passing into the Gas Industry

should be on as wide a basis as possible. On this score the Industry should benefit by the establishment of the new course in chemical engineering.

It is necessary to have this background in mind when considering the implications and the possibilities of the new move, and we think, too, that it is necessary to bear in mind that the Fuel Department at Leeds is a small specialized department in a large and growing university, and that its field of work is not solely devoted to gas engineering, but includes fuel technology in general, refractory materials, and metallurgy. The Department was established in 1906, four years before a fund was raised by the Gas Industry to perpetuate the memory of Sir George Livesey, which fund was allocated to endow the Chair of the Department known as the Livesey Professorship; the degree course in gas engineering was instituted at the time. To this extent the Gas Industry gave a certain status to the Department and the first gas engineering degree course came into being—a course which remains the only one of its kind in the country. The Industry showed vision, and its action was mutually advantageous to the Industry and the Department; if the Department gained in status, the Industry gained in prestige.

The Industry and the University have associations extending over 30 years. After the last war, what started as an industrial research experiment showed marked growth, but there has been nothing whatever spectacular about the period 1920–1939. The Industry continued its support and we are sure that the Fuel Department at Leeds University has always been duly appreciative and duly grateful, though it has from time to time occurred to us that the research liaison between a prosperous national Industry and a very small Department of a modern centre of industrial learning was not as effective as it could have been. We suppose that he who pays the piper calls the tune, but the tune which the Industry called, through The Institution of Gas Engineers, was monotonous—the regular publication of quite unnecessarily voluminous reports, with its inevitably deadening effect on the few research workers engaged by the Industry who were allowed to carry out their work at Leeds. For twenty years regimented research had to be periodically on parade on the Institution parade ground. The work was appreciated by the few, the publication of the hefty reports must have assisted the paper industry, but the results of what without a shadow of doubt were valuable pieces of research and investigation were not seized upon quickly and they did not meet with the measure of general application for which they seemed to call.

Financial support of Leeds University by the Gas Industry has comprised the Corbet Woodall Scholarship (£60 a year), the Institution Fellowship (£200 a year), more recently the William Cartwright Holmes Scholarship (£120 a year), and *ad hoc* grants in support of special researches of the Joint Research Committee. The Gas Industry was instrumental in bringing into being a degree course in gas engineering; it has supported the Fuel Department at Leeds; it has stuck to its bargain; we think that it has not been the loser thereby. We presume that, had the *ad hoc* grants for research not been allotted to Leeds workers, they would have been allotted elsewhere. No industry can afford to neglect research.

Remarking on the report of the Livesey Professor for 1940–41 we mentioned that the present wartime conditions have increased the demand for students to an extent which is far greater than can be met, but we added ("JOURNAL" of Feb. 18 last): "Not all of them, we think, will enter the Gas Industry, for the simple reason that the prospects in it are woefully ill-defined." We turn to Professor Townend's Paper and find the statement that the demand for Leeds graduates has always been greater than can be met, "although the Gas Industry itself has not always sought these men, and has frequently let them pass into other industries where generally they have rapidly attained senior posts." Actually, of some 200 students who have passed through the Fuel Department at Leeds, mainly since 1920, 53 have entered the Gas Industry, 30 have joined the chemical engineering staffs of constructional engineering firms, and 7 are now with gas appliance manufacturers. In other words, the Gas Industry as a whole has recruited into its ranks since the last war about four students annually. In this knowledge we are able to approach the question of the new degree course in chemical engineering with some sense of proportion and in reasonable perspective.

We quote the following passage from the William Young Memorial Lecture delivered by Sir Frederick West at Largs in 1938. It is apposite: "The Gas Industry has for long been looked upon as decadent and unattractive by young men seeking a career. I remember, some few years ago, interviewing a young Cambridge graduate who was going abroad to take up a position with a gas undertaking. I commenced by saying to him, 'I suppose that when your particular chums at Cambridge heard that you were entering the Gas Industry your standing, which previously had been fairly high with them, sunk to zero.' He replied, 'You are quite correct'." In his Institution contribution Professor Townend stated frankly that the degree title "Gas Engineering" is not popular among prospective students. This, he added, is "quite understandable, for frequently at the time of entry to a university a student has not made up his mind as to his ultimate career and he is unwilling to accept the label of a particular industry. He therefore seeks a more general qualification. There can be no question that the numbers ultimately passing into the Gas Industry through universities will be increased by facilities for degree courses in chemical engineering."

It is, we think, a sad commentary that after all these years the holder of the Livesey Chair should have to say that the degree title "Gas Engineering" is not popular among prospective university students, and that one of the foremost leaders of the Gas Industry should also have to emphasize the lack of appeal of the Gas Industry, the while maintaining, as he did in his Presidential Address to the Institution last month, that we can only succeed as an Industry if we have the very best of human material from which to train and select the gas engineers and managers of the future. There are those in the Industry who discern rightly or wrongly—wrongly, we hope—a weakening in the bond between the Industry and Leeds University as a result of the new move under discussion, arguing that while other Chairs of chemical engineering exist, there is one and one only specialized degree course bearing the label gas engineering, a course made possible of establishment by the Gas Industry itself, and they point to the debt which the University owes on this score to the Industry. This debt, we suggest, has always been recognized and appreciated, and we feel that it has been honoured; and we regard the alternative course in chemical engineering not as a sign of cleavage but as a logical development in scientific education, which is the prerogative of no one university, old or young. There are many graduates in the Gas Industry who hold degrees other than that of gas engineering. We do not know the relative proportions, but we regard the diversity factor as a sign of strength and not as a sign of weakness. And many of the most capable men in the Industry have no degrees at all.

A friend with whom we had a most interesting conversation on this subject of the relationship between the Industry and Leeds University only a few days ago said enthusiastically that the Gas Industry is in fact a great and a very important industry, that it should attract youth, that the word gas could be made glorious. So what, he added, is the basis for this snobbishness which makes the degree title "Gas Engineering" unpopular among prospective students? Does the answer, we wonder, lie in the attitude of the Industry itself? As a contributor to the discussion on Professor Townend's Institution Paper remarked, to attract the youngster of self-confidence and initiative, which is the type we want, we must offer a career of opportunity. Are we inclined instead to stress the merit of security? Broadly speaking, one gets in this world what one pays for, and one has to pay for what one gets. Which is germane to the subject of this comment. And again to bring a sense of proportion to bear on the matter, we would call attention to the estimate put forward at the Institution meeting that something like 1% of the younger generation receives university training, so that for our Industry to take its quota merely on size would mean an annual intake of at least 50 university trained candidates. Is

there this intake? We have quoted the intake from Leeds University, the "special" seat of gas learning sponsored by the Gas Industry. Is this one in which the Industry can take pride and find lively satisfaction?

DECLARED CALORIFIC VALUE

THE implications of reduction in declared calorific value under wartime conditions were discussed recently by the Eastern District of the Southern Association, the discussion being introduced by Mr. E. G. Stewart, of the Gas Light and Coke Company. The meetings of this section of the Association are private, but we have been afforded the opportunity of publishing a report of this discussion, which to our mind is both important and very helpful at the present time, when benzole is needed, oil usage has to be cut, coke output maintained as far as possible, and the demand met for gas to factories and to the homes of the community—a complex problem of conflicting elements, as all will agree who appreciate the coal situation. Paper restrictions preclude anything like a verbatim report of the discussion, but so much hinges on decisions regarding calorific value that we gladly give an abstract of Mr. Stewart's comments to-day and intend to follow up with a condensed account of the subsequent discussion next week. With the small quantity of paper which is available to us, this means that we have to hold over till later further slices of discussion on the Institution Papers presented on June 10, an abstract of Mr. Robert Cowie's Presidential Address to the Waverley Association, and sundry other items.

We will not at the moment comment at any length on this discussion, but we would call particular attention to the remarks of Mr. Stewart on the dilution of coal gas by water gas; we think them most significant. Such dilution, of course, can be carried out either by steaming the retort or from a separate plant. Mr. Stewart said: "This is the most suitable method of obtaining a reduction in coal usage, no increased proportion of inerts being added to the gas," but "*the reduction in coke for sale is approximately 1 ton per ton of coal saved.*" The quantities of tar and ammonia and benzole recovered are reduced proportionately to the coal saved. If calorific value is varied by blue water gas coal tonnage is reduced; coke reduction is reduced by the same amount. We regard this as a consideration fundamental to thoughts on gas manufacture. During the discussion the point was amplified. Suppose that on carbonization a ton of coal yields 78 therms. From 2 tons we get 156 therms of gas. One ton of coal in an outside water gas plant will make 156 therms of blue gas. Two tons of coal will make by carbonization 156 therms of gas and 1 ton of coke. If the coke is kept off the market, 1 ton of coal will make 156 therms of gas. It is not sufficiently appreciated that 60% of water gas is made from steam and not from coal. The bearing of this on declared calorific value and gas manufacture in general is obviously a matter of moment.

Waste of Fuel Order

The Waste of Fuel Order, 1942, made by the Minister of Fuel and Power, which came into force on June 29, is to prohibit the waste and the uneconomical use and consumption of coal, gas, electricity, paraffin, and liquid fuel. It does not apply to fuel used for the propulsion of mechanical vehicles, which has been dealt with by the Motor Fuel Rationing Order. By waste of fuel is meant, according to a statement from the Ministry, its use, for example, when not reasonably necessary, its use in unnecessary quantity for a particular purpose, and the use of fuel for a particular purpose when another kind of fuel is already being used which would reasonably suffice for that purpose. Uneconomical use means, for example, the failure to take reasonable steps, including the provision of proper fittings and appliances, to secure a reduction of consumption, and the failure to maintain such fittings in serviceable condition. The Order revokes the Advertisement Lighting (Restriction) Order made by the Board of Trade on May 11, but re-enacts and extends the provisions. The Minister may issue directions under this Order with a view to preventing waste and effecting all reasonable economy in consumption of fuel. Penalties for infringement of the Order are as laid down in the Defence Regulations.

Personal

Mr. G. D. GLENCY, Senior Inspector at the Manchester Gas Meter Testing Station, has been appointed Chief Inspector in succession to Mr. Arthur Winterbottom, who retired on June 22. Mr. Winterbottom has served the Justices for 40 years, has been on the Council of the Association of Statutory Inspectors of Gas Meters for the past 18 years, and is well known in the Gas Industry.

A Message to the American Gas Association

Continuing the interchange of correspondence between the S.B.G.I. and the American Gas Association, Sir Francis Joseph, President of the Society of British Gas Industries, wrote on June 2 to Mr. G. S. Hawley, President of the A.G.A., a letter in which he said:

"If the people of the United States of America could only realize how sincere and real is our gratitude for their help they would, I am sure, be gratified. When our womenfolk go shopping and see on so many of the articles they get for their weekly ration the words 'Made in U.S.A.' they know you are with us. They know that without your help we could not win, and looking ahead reminds us of the great job we've got to do. As a miner said to me the other day: 'When this job's over we'll need some wise heads and good friends to put things right, but if the people of America stand with us there'll be nowt to fear.' That's the opinion of us all.

"You may be asking about our output. All we can say, Sir, is that we are going ahead by leaps and bounds. There's much to be done, but we'll do it. There's much to be thankful for—and we are. Your friendship, your help, your backing, and your understanding enable us to face the day's task with cheerfulness and the future with the sure and certain hope that we'll come through together to victory.

"The Gas Industry is doing a great job and doing it in a way which has earned the admiration of the Government and the people. The trouble is that everyone expects a little more than is possible from us. Our fuel shortage is due to the tremendous expansion of our industrial effort. But we'll get through.

"Every member of the Gas Industry of Great Britain is looking forward to the time when we can compare notes. Then only will it be possible for us to assess the great value of the contribution which our Industry has made to the war."

Gas for Motor Transport

The Parliamentary Secretary to the Ministry of War Transport stated in the House of Commons recently in answer to a question that the extent to which it might be possible to make use of town gas in road vehicles was under urgent consideration and that an early statement might be expected.

In view of the conflicting statements which have appeared in the Press, the Ministry of War Transport desire to make it clear that it is their intention, in consultation with the new Ministry of Fuel and Power, to utilize coal gas as a means of driving road vehicles in areas where local surpluses may from time to time exist. To ensure that these surpluses are used to the best advantage, it will probably be found necessary to control conversions by some form of licensing system, and it may be necessary to ration the amount of gas which may be allowed to individual vehicle operators.

University of Leeds

The following are the June Examination Results in the Fuel Department at Leeds University:

B.Sc. Ordinary (*Gas Engineering*): D. Hebden, J. Oates, R. P. Rowland.

B.Sc. Honours (*Gas Engineering*): R. Long, First Class; W. H. Hollis, B.Sc., Second Class.

B.Sc. Honours (*Fuel and Metallurgy*): S. E. Mayer, B.Sc., First Class; A. Hartley, Second Class.

M.Sc.—D. C. Gunn, B.Sc.

A Meeting of the Central Executive Board of the National Gas Council will be held in Committee Room 1, Gas Industry House, on July 14, at 2.30 p.m.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Waverley Association of Gas Managers

The Annual Meeting of the Waverley Association of Gas Managers was held in the Y.M.C.A. Hall, Edinburgh, on June 19, when Mr. ROBERT COWIE, Hawick, President, extended a welcome to a large company, making particular reference to the presence of Dr. E. W. Smith, the Director-General of Gas Supply, and Mr. E. V. Evans, President of The Institution of Gas Engineers and Chairman of the Post-War Planning Committee.

Apologies from members and officials of kindred societies were read by the Secretary, Mr. R. J. Philp, North Berwick, and thereafter the minutes and the Financial Statement were approved.

On the motion of Mr. David Fulton, Helensburgh, it was decided to raise the subscription for ordinary members to five shillings per annum and for extraordinary members to seven shillings and sixpence.

The President reported that the Council had agreed to accept the offer by Mr. J. W. Napier to provide a medallion for the President as a memorial to the late William Young.

New Members.—The following were admitted to membership: Messrs. A. Henderson, Penicuik; T. McCartney, West Calder; D. B. Laws, Spittal, Berwick-on-Tweed; D. M. Kerr, Kingskettle; and A. Brown, Alloa.

The members were upstanding in memory of the following members who had died since the last meeting: Messrs. John Wilson, Dundee; R. A. Harvey, Catrine; K. Mackay, Oban; A. P. Dale, Beith; and J. Bridge, Elland, all Ordinary Members; and Messrs. R. T. Simpson, of Messrs. Peebles & Co., Leith, and R. R. Penman, of Penman & Co., Glasgow, Extraordinary Members.

New President.—On the motion of the President it was unanimously agreed that Mr. W. M. Henderson, Dalkeith, be appointed President for the ensuing year.

Secretary and Treasurer.—Mr. R. J. Philp was reappointed Secretary and Treasurer, Mr. D. D. Melvin, Edinburgh, pointing out that this was Mr. Philp's twenty-first year of service in that capacity.

Council Members.—Messrs. Farquhar, Peebles, and Hamilton, Loanhead, were elected to fill two vacancies in the Council, Mr. John O'Halloran being reappointed Auditor.

After a collection had been taken for Red Cross Funds (amounting to £8 4s.) the President said the Address had been circulated and would be taken as read, thus allowing more time for discussion. An abstract of the Address and our report of the discussion will be published subsequently in the "JOURNAL."

Mr. W. Campbell, Galashiels, Past President, presenting Mr. Cowie with the President's Badge, referred to the fact that Mr. Cowie's father, who was present with them, had himself been President of the Association thirty-one years before.

Mr. Cowie replied briefly and Mr. J. M. Dow, Kirkcaldy, proposed a vote of thanks to the President and Council.

Luncheon Speeches

At a luncheon in the North British Hotel Mr. R. Cowie presided.

Dr. E. W. SMITH, C.B.E., proposing the toast of the Gas Industry, said the Industry must not be regarded merely as an investment for those who sought to take advantage of the requirements of the community. The time was coming when the Industry would be owned as a public utility of a national nature, possibly with fixed dividends, and possibly with a common price. The future of coal was in its processing, and the future of the country depended on the extent to which it was processed. It was important that the gas and coke industries should help each other in their development. The Gas Industry should look on itself as a chemical industry responsible for the processing of coal. They should take a broad view and ask how they could conduct it, modify it, link it with the chemical industry, and so make it something bigger and better than ever before.

Mr. E. V. EVANS, O.B.E., replying, said that in his opinion the Industry did not want Government control and, so far as he could see, the Government did not wish to control it. They wanted the help of the Government to develop their Industry, and if their plans for development and progress were well laid he was sure they would get the help they needed. The big question fell into two heads: First, what part would the Industry play in the national fuel policy? Secondly, that having been determined, what was the Industry to do to remodel itself to meet the new requirements? They would need a Royal Commission to enquire into the fuel question, consisting of men free from political influences. The bluebook they produced would be the *vade mecum* of the Ministry of Fuel, which would need this dispassionate enquiry. When it was decided where they stood in the picture they would have to make up their minds what they were to do, and they would have to act quickly. The secret of their advancement was the more abundant sale of gas. The more they sold, the cheaper per therm it would become. The average small house required about 270 therms a year for heating. It had been proved that if an undertaking possessed a well-worked-out method of charge an all-gas house could be supplied with its fuel at substantially the same price as if raw coal were burned. Knowing this, and knowing that up to the war the Industry was supplying 25% of this requirement in gas and 5% in coke, it was clear how mighty the Industry would become if it could supply 250 therms a year per household instead of merely 60. These were the lines along which they would have to develop.

Mr. JAMES JAMIESON, Edinburgh, proposed the toast of "Kindred Associations." The Waverley Association had been honoured that day for the first time in their history by the presence of the President of the Institution. They congratulated Mr. Evans on his election to an office he would fill with dignity and distinction. They also had with them Mr. Ronald Keillor, President of the North British Association, whom they complimented on his election to the Council of the Institution. He also included in his toast the Directorate of Gas Supply as a kindred Association. Dr. Smith's appointment was a happy choice, and had been received throughout the Industry with unexampled unanimity. Mr. Jamieson said it was unfortunate that the Waverley Association had not accepted affiliation with the Institution, because it limited Scottish representation on the Institution Council to one, which was totally insufficient. There would be no more fitting way of commemorating the presence of the Director-General of Gas Supply and the President of The Institution of Gas Engineers that day than by linking the Waverley Association with the Institution and thereby making the chain complete.

Mr. RONALD D. KEILLOR, Greenock, President of the North British Association, replying, said the purpose of the meeting would be amply fulfilled if it resulted in the affiliation of the Waverley Association to the Institution.

Mr. R. COWIE, sen., father of the President, presented a case of pipes and a can of tobacco to Mr. John O'Halloran, Auditor of the Association for 36 years, and Mr. O'Halloran, replying, said there were now only two survivors of the membership when he joined forty years ago.

Mr. JAMES DICKSON, Kirkintilloch, proposed the health of the President, pointing out that Mr. Cowie was in the fourth generation of gas engineers.

The United Kingdom Gas Corporation, Ltd., is paying a final dividend on the Ordinary shares of 3%, making 5% for 1941.

The Directors of the Caledonian Gas Corporation recommend the payment of dividends of 4½% on the Ordinary shares, the Cumulative Preference shares, and the Preferred Ordinary shares.

Messrs. W. C. Holmes & Co., Ltd., advise us that they have opened a Birmingham office under the management of Mr. M. D. Auchterlonie. The address is 21, Bennett's Hill, Birmingham 2; Telephone Midland 6830; Telegrams Biprodeng, Birmingham.

Radiation kitchen equipment installed at Chandos Senior School, one of the many cooking centres which have been organized by the Middlesex County Council for the feeding of London's school children, includes a "Chester" range; 6 ft. "Belgravia" hotcloset, pudding steamer, "Lune" boiler, &c., and is able to cater for 250 children.

Members of The Institution of Gas Engineers are invited to attend a Joint Meeting of the Institution of Chemical Engineers, the Institute of Petroleum, and the Chemical Engineering Group, to be held on July 14, at the Institution of Mechanical Engineers, Storey's Gate, S.W. 1, at 5.30 p.m., when a Paper on "The Separation of Gases" will be presented by Dr. M. Ruhemann. Admission is by ticket, which may be obtained from the Secretary, Institution of Gas Engineers, 1, Grosvenor Place, S.W. 1.

An Ordinary Dividend of 20%, against 15½% last year, was declared at the 52nd Annual Meeting of Keith Blackman, Ltd., on June 25. The net profit for the year ended March 31, 1942, after transferring £15,000 to Reserve Account, writing off £8,144 from land and buildings and charging £12,143 expended during the year on air-raid precautions, was £43,753, against £38,414 for the previous year. Mr. George Keith, Chairman and Managing Director, in the course of his statement, said the issued capital had been increased to £450,000 by the issue of the balance of 50,000 £1 Preference Shares.

Mr. Joseph Morley, Chairman and Managing Director, announced at the 45th Annual Meeting of Meters, Ltd., on June 30, that the net profit for the year ended March 31, 1942, was £28,668, against £12,990 for the previous year. The subsidiary company had again had a successful year and paid a good dividend. With deep regret the Chairman referred to the death in January last of Mr. F. O. Manning, who had been a valued member of the Board since 1928 and had acted as Secretary since 1913. Final dividends of 2¾% on Preference stock, and 6% on Ordinary stock, making 5½% and 10% respectively (against 5½% and 9% respectively last year) were declared.

The Board of Trade announces that under the Machinery, Plant, & Appliances (Control) (No. 2) Order, 1942 (S.R. & O. 1942, No. 1175, price 1d.), which came into force on June 18, 1942, new classes of machinery, plant and appliances are added to those already listed in the previous Order (S.R. & O. 1942, No. 1, price 2d.), and certain of the classes already listed are amended. Further, certain amendments have been made of the body of the previous Order. Copies of the Order are obtainable from H.M. Stationery Office. Application forms for licences to acquire machinery, plant, and appliances falling within the Schedules to the Orders may be obtained from the Machinery Licences Division, Board of Trade, 1–6, Tavistock Square, London, W.C. 1.

REDUCTION IN DECLARED C.V.*

ITS IMPLICATIONS UNDER WARTIME CONDITIONS

By E. G. STEWART, Gas Light and Coke Company

BENZOLE is required, oil usage must be cut to the limit, in many places coke output maintained and the demand for gas, particularly to factories and to the workers' homes, kept up. Not an easy problem.

One thing is obvious immediately—in benzole and gas oil we have the sources of gas of the highest calorific value; equally they may contribute in happier times, say, 20% of the total thermal output. The thermal output can be replaced by gases derived from coke, but the best of these has a C.V. of 280 B.Th.U. only, and the use of the remaining rich hydrocarbons in the coal gas to enrich increasing volume of these low C.V. gases must direct attention to a lowering of the C.V. of the final gas sent out.

I propose to adopt two postulates, neither of which is strictly true—*viz.*:

(1) That benzole extraction is universally adopted.

(2) That the demand for gas measured in therms is unaffected by a change in C.V.

On the last point I would only say that experience does indicate a drop in consumption with falling C.V., and that it is assumed to arise because: (*a*) Leakage and wastage are volume effects and the losses are thus proportional to the C.V.; (*b*) low C.V. gases usually have short flames and so prevent the wastage inseparable from quick operation secured by flaring the gas up ; (*c*) low C.V. gases are normally of higher specific gravity and so the thermal output of the appliance is reduced.

Let us now examine the effects of lowering the declared calorific value upon (*a*) the raw material requirements of coal gas manufacture, (*b*) the raw material requirements for carburetted water gas, (*c*) (i) the changed gas-making capacity of the plant available at full load, (ii) load factor, (*d*) labour requirements, (*e*) flexibility, and (*f*) combustion characteristics of gas.

Raw Material Requirements

Consider first the case of coal gas, without carburetted water gas. The declared calorific value can be reduced by dilution of the coal gas with waste gas, producer gas, or blue water gas. Diagram 1 shows in a simple manner the changes in coal consumption and coke production after providing the coke necessary for heating the retorts and making the diluent gas. It starts with a basis of coal gas stripped to a calorific value of 525 B.Th.U. per cu.ft. by the recovery of 2.5 gall. of benzole per ton of coal. It also postulates a constant demand from the district of 5,000 therms—*i.e.*, equivalent to 1 million cu.ft. when the C.V. is 500.

Dilution by Inerts.—Waste gas dilution clearly does not affect the requirements of coal or the production of coke and merely loads up the distribution system to no purpose. Also, serious disadvantages result if the waste gas is "pulled" through the retort walls, and these need no elaboration.

Dilution by Producer Gas.—It is important to distinguish between the small quantities of producer gas required to adjust the calorific value of stripped coal gas to a district calorific value of 500, and the much larger quantities involved in reducing the calorific value to, say, 450. The process either way has some attractions for works unprovided with facilities for making blue water gas. Particularly, it avoids any tendency to "pull on" the retorts, lower grade coke may be utilized and labour requirements are simplified. On the other hand, the quantity of coal saved is small.

Dilution by Blue Water Gas, either by Steaming the Retort or from a Separate Plant.—This is the most suitable method of obtaining a reduction in coal usage, no increased proportion of inerts being added to the gas. An appreciable reduction in coke is experienced; indeed, as the diagram shows, the reduction in coke for sale is *approximately* 1 *ton per ton of coal saved.* In addition, the quantities of tar (creosote pitch liquid fuel) and ammonia and benzole recovered are reduced proportionately to the coal saved.

The possession of blue water gas plant is necessary where the coal gas is made in horizontal retorts or ovens. With vertical retorts of either type it can be made in situ. It is the means *par excellence* of reducing coal consumption provided a suitable amount of plant is available.

Carburetted Water Gas

Many of the largest and medium sized undertakings have been built up with the provision of carburetted water gas plants for peak load and emergency purposes. It is imperative in the national interests that gas oil should be used as sparingly as possible. A reduction in declared C.V. would reduce the proportion of oil gas in carburetted water gas and lead to the saving of oil per constant quantity of blue water gas as follows:

C.V. of C.W.G.	Gall. of oil.	Cu.ft. of oil gas.	Cu.ft. B.W.G.	Vol. of C.W.G.	Therms in C.W.G.	% Loss of output.	Gall. of oil per therm C.W.G.	% Saving in oil for same thermal output of gas.
500	2.2	154.0	846	1,000	5.000	0	0.440	0
475	1.91	133.7	846	979.7	4.652	7	0.411	7
450	1.63	114.1	846	960.1	4.316	13.5	0.378	14

The saving of 14% of oil for a reduction in declared C.V. of 50 B.Th.U. per cu.ft. is rather less than might have been anticipated, but a more serious effect of a curtailment of oil supplies lies in limiting of the thermal putput of gas at peak load times. I will deal with this later.

Carburetted water gas hardly ever forms 100% of the gas supplied, and Diagram 2 illustrates the variations in coal requirements and coke produced for sale for varying quantities of gas oil used (*i.e.*, with varying percentages of carburetted water gas of the declared C.V.). Diagram 2, which relates to 5,000 therms of mixed gas for sale, and to declared calorific values of 500, 475, and 450, has been prepared. The full lines relate to 2.5 gallons of benzole recovered per ton of coal (as assumed throughout this Paper), but for added interest, dotted lines are shown indicating the coal requirements, &c., if benzole recovery was ceased.

This is apposite to many wartime difficulties—*e.g.*, if an undertaking has had some of its carbonizing plant damaged, or if its carbonizing plant is operating to full capacity, due to new factories or the incidence of evacuation, it may be forced to the use of larger percentages of base load carburetted water gas with correspondingly high oil consumption, low coal usage, low coke and low benzole production.

Alternately, if curtailment of gas oil supplies became an absolute necessity, then, even if the necessary carbonizing plant existed, full gas supply could only be maintained by a combination of the following changes: (1) Increased coal supply, (2) reduced declared C.V., (3) reduced benzole production, (4) variation in coke production.

Change in Thermal Output with Change in C.V.

For this part of the discussion it is necessary to consider the several types of plant separately, alone and in combination with carburetted water gas plant.

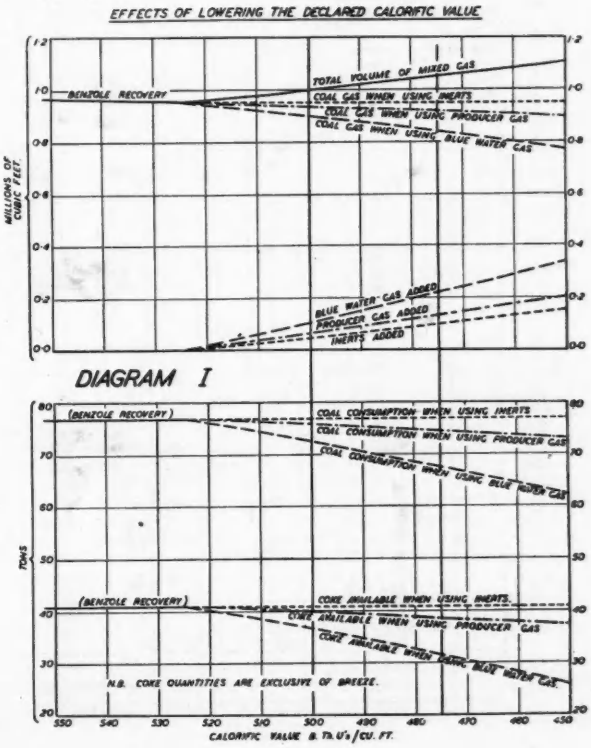

EFFECTS OF LOWERING THE DECLARED CALORIFIC VALUE
TOTAL VOLUME OF MIXED GAS
BENZOLE RECOVERY
COAL GAS WHEN USING INERTS
COAL GAS WHEN USING PRODUCER GAS
COAL GAS WHEN USING BLUE WATER GAS
MILLIONS OF CUBIC FEET
BLUE WATER GAS ADDED
PRODUCER GAS ADDED
INERTS ADDED
(BENZOLE RECOVERY)
COAL CONSUMPTION WHEN USING INERTS
COAL CONSUMPTION WHEN USING PRODUCER GAS
COAL CONSUMPTION WHEN USING BLUE WATER GAS
TONS
(BENZOLE RECOVERY)
COKE AVAILABLE WHEN USING INERTS
COKE AVAILABLE WHEN USING PRODUCER GAS
COKE AVAILABLE WHEN USING BLUE WATER GAS
N.B. COKE QUANTITIES ARE EXCLUSIVE OF BREEZE.
CALORIFIC VALUE B. Th. U's / CU. FT.

DIAGRAM I

* From an Introduction to a Discussion at a meeting of the Southern Association of Gas Engineers and Managers (Eastern District).

I (i) *Continuous Vertical Retorts.*—For good quality English coals it would appear, particularly from the publications of E. W. Smith (1928), Barash and Tomlinson (1931), and Richards (1934), that over the range of calorific values 500 to 450 B.Th.U. per cu.ft. of gas, the thermal output of gas per retort per day is substantially constant. At lower calorific values, Barash and Tomlinson's results suggest that there is a falling off in thermal output to the extent that at calorific values of 400 and lower, a retort can only be assumed to make a constant volume of gas per retort.

(ii) *Continuous Vertical Retorts plus Carburetted Water Gas Plants.*—In most cases with which I am familiar there is a combination of continuous vertical retorts and carburetted water gas whose respective thermal outputs are 75 and 25. A change in declared calorific value from 500 to 450 would not substantially change the thermal output of the retorts, but by curtailment of oil would reduce the thermal output of C.W.G. by about 13.5%, making a reduction of about 3.4% for the combination.

II (i) *Intermittent Vertical Retorts.*—This type of retort produces richer gas than the continuous type, and the range of C.V. over which the thermal output of gas per retort is substantially constant is probably 500 to 560. Below a C.V. of 500 the volume of gas per retort per day is substantially constant as shown by Thorman in 1931. In other words, a reduction in declared C.V. from 500 to 450 involves 10% loss in thermal output.

(ii) *Intermittent Vertical Retorts plus Carburetted Water Gas Plants.*—If for this example we consider a combination of these two types of plant in which 25% of the thermal output is provided by carburetted water gas, a reduction in declared C.V. from 500 to 450 would entail a loss of 10% in thermal output from the carbonizing plant plus a 13.5% loss from the carburetted water gas plant, or a combined loss of 11% of thermal output from the total plant.

III (i) *Horizontal Retorts and Coke Ovens.*—These plants are normally provided with the proportion of blue water gas plant necessary to produce the diluent blue water gas and produce gas of the declared value. Unless additional diluent plant is provided the C.V. of the gas cannot be reduced when all the coal gas plant is in full operation.

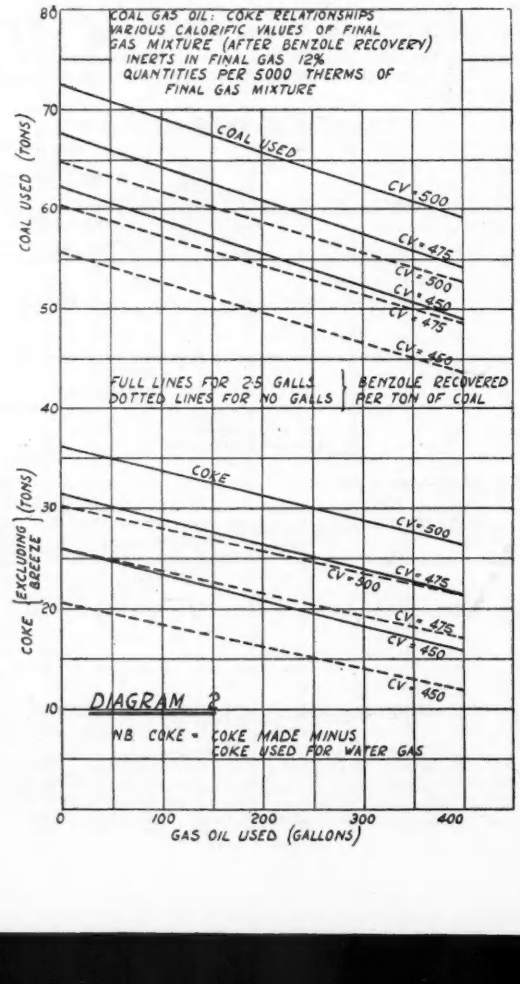
(ii) *Horizontal Retorts and Coke Ovens plus Carburetted Water Gas Plants.*—With a combination of these types of plant in which 30% of the thermal output is provided by carburetted water gas, a reduction in the declared C.V. affects the thermal output from the carburetted water gas in a two-fold manner. First, to dilute the coal gas further from 500 to 450 will absorb the blue water gas from 81% of the carburetted water gas plant, involving a loss of thermal output equal to 81% of the gas oil used. The remaining 19% of gas oil would be subject to a 13.5% curtailment due to the reduction in C.V., making a total reduction of 83.6% in gas oil used. Since, at 500, the oil therms constitute 53% of the thermal value of carburetted water gas, the loss in thermal output from this combination of plant on reducing the declared calorific value from 500 to 450 is $\frac{83.6}{100} \times \frac{53}{100} \times \frac{30}{100} = 13.3\%$. In fact, with this particular combination of plant at a C.V. of 440, all the oil would have been saved with a loss of 15.8% of the total thermal output.

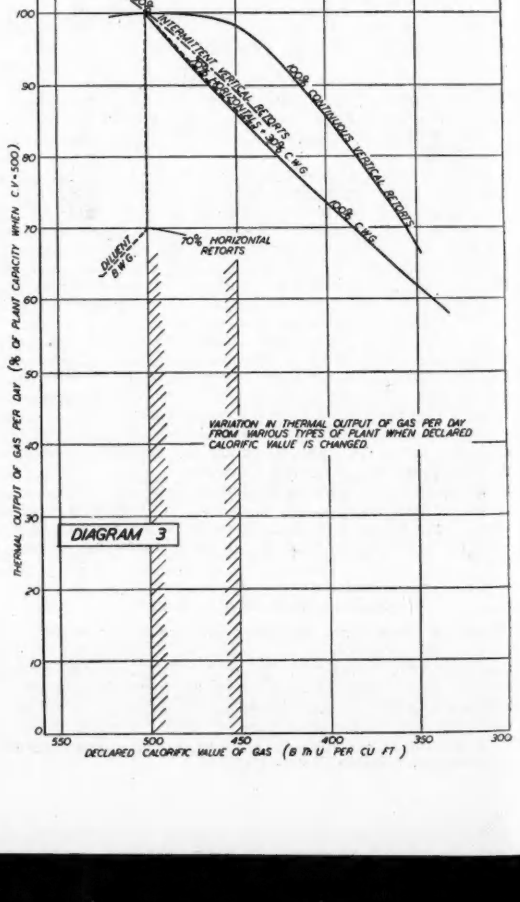
Results for the variation in thermal output of various types of plant with changes in the declared C.V. are summarized in Diagram 3. Except for both types of steamed vertical retorts which have substantially constant thermal outputs in particular ranges of C.V., most combinations of plant suffer a loss in thermal capacity proportional to the percentage reduction in declared C.V.; in other words their *volumetric* output remains substantially constant with changes in declared C.V.

Load Factor.—It must be clearly recognized that the conclusions drawn in respect of output are applicable only when the plant as a whole is at full load. In wartime some undertakings are experiencing extra load on their existing plant due to new war factories, the reception of evacuees, or damage to plant. On the other hand, evacuation areas may not have the surplus of plant which might have been expected due to war damage, loss of trained personnel, and a slowing-up of production under conditions of blackout. This last combination of circumstances, coupled with the longest spell of cold weather ever known, meant that in our own undertaking we were extended almost to the limit of our gas-making capacity in January and February of this year. Even so the thermal value of the gas derived from oil (exclusive of the associated blue water gas) for the twelve months from April, 1941, to March, 1942, amounted to only 4.7% of the total therms delivered. Incidentally, the use of about half this oil, in a period of 9 weeks, enabled the quantity of gas delivered to be increased by approximately 20%. Benzole recovery, on the other hand, remained, *pro rata* to the coal, substantially steady throughout the year.

Labour Requirements and Reduction in C.V.

Since for a constant thermal output of gas lowering the declared value means the additional use of water gas, labour requirements are likely to be somewhat increased, particularly where the retort house conditions are such that a reduction in output does not result in a




100% INTERMITTENT VERTICAL RETORTS
100% CONTINUOUS VERTICAL RETORTS
70% C.W.G.
100% C.W.G.
70% HORIZONTAL RETORTS
DIAGRAM 3
VARIATION IN THERMAL OUTPUT OF GAS PER DAY FROM VARIOUS TYPES OF PLANT WHEN DECLARED CALORIFIC VALUE IS CHANGED
THERMAL OUTPUT OF GAS PER DAY (% OF PLANT CAPACITY WHEN C.V.=500)
DECLARED CALORIFIC VALUE OF GAS (B Th U PER CU FT)

reduction in men employed, such as in works with single retort houses, and also because of the separate crews required when water gas plants are required for dilution. In these days, however, it is not so much the cost of labour that is the difficulty as the actual numbers of men needed. Particularly is this felt at times of peak demand, and it is here that the therms from oil are so advantageous, as they give us the maximum output per man employed.

Flexibility of Gas Manufacture

As already indicated, the continuous vertical retort is more flexible to changes in C.V. with less alteration of output than any other types of plant. On the other hand, this type of plant alone is less flexible for short period seasonal variations than intermittent vertical retorts or horizontal retorts. The flexibility to meet changing demands of any of these types of plants is much increased by co-operation with carburetted water gas plant which, although dependent upon imported oil, is still the soundest insurance for maintenance of gas supply in the event of damage by enemy action to coal gas plant. As I pointed out to the Institution in 1937, the use of carburetted water gas plant as a reserve for meeting peak loads is more economical in coke and labour thus:

Plant held in reserve .	Say 100,000 cu.ft. per day capacity.
If coal gas . . .	Carbonizes 7 tons coal per day.
	Coke for sale to public, 3½ tons.
	Uses on slow fires 1 ton per day.
If water gas . . .	Uses when working 1¾ tons of coke daily.
	When standing—no coke.

Thus, if the coal gas unit stands on slow fires 5 days for each day of useful work, the net consumption of coke will be 1¾ tons, which is equal to that of the water gas plant under similar conditions, and the advantage of water gas increases as the proportion of stand-by days to working days exceeds five to one.

Further, in these days when some of us are short of gasholders, the water gas plant enables us to secure a quick reduction of output at the end of a peak demand, and so avoid the waste and nuisance of having to blow away gas.

Combustion Characteristics

For any individual undertaking the effects on the consumer's appliances of changing the composition and properties of gas supplied will be divided into:

(1) The effect of the first change to a new declared value on the appliances.

(2) The ability of the appliances after any initial adjustment demanded by (1) to meet the new effects imposed by peak load conditions.

As to (1), the effect of changing gas will be (*a*) change of C.V. affecting air required for combustion ; (*b*) change of sp. gr. affecting gas injected, and air drawn in.

The first alteration will be a function of the C.V. and sp. gr. in modifying the thermal capacity of the appliance in accordance with the Wobbe index—$\frac{\text{C.V.}}{\sqrt{\text{sp. gr.}}}$—so that an appliance giving, say, 1.00 useful therms output per hour with gas of 500 and sp. gr. 0.4 will only yield 0.76 therm with 450 gas and sp. gr. 0.56. To some extent this can be corrected by raising district pressures, an expedient that fails, however, where there are many governed appliances in use.

The second change is an alteration of burning characteristics. With 500 gas, part coal gas and part carburetted water gas, the A.T.B. variation may be expected to be 55–85 and existing appliances will work within this range, though some are noisy at the lower end and others give incomplete combustion at the higher limit. Lowering the C.V. and increasing the proportion of water gas reduces the variation to 45–55—*i.e.*, the numbers are lowered and narrowed. The same effect is, of course, noted with the specific gravity which, with 500 B.Th.U., will range, say, between 0.39 and 0.51, but with the 450 B.Th.U., between 0.50 and 0.58.

At the same time, the reactions of various designs of appliance are largely changed when served with the new gas, but, in general, they are likely to be sensitive to much smaller variations even after adjustment.

There are also to be considered the case of luminous flame appliances, such as instantaneous water heaters. Here, not only is the thermal throughput subject to reduction, but the flame length is decreased, resulting in water of a lower temperature being produced.

To effect a change and yet maintain good service necessitates a thorough knowledge of the nature of existing appliances, and experimental testing of all of them over the range of any proposed alterations is clearly indicated before anything is done. The policy of alteration of air inlets, or even exchange of certain appliances, can then be laid down and carried out in an organized manner.

I have, I hope, shown that we can, if required, save coal in appreciable quantities, but only at the cost of more or less reduced capacity, and in any case with proportionate reduction in the production of our other fuels, coke, pitch-creosote, and benzole.

As to gas oil, here again it is possible to make even severe cuts in consumption, but for peak loads and emergency occasions the use of some oil is positively necessary. Our experiences in the past year or so have brought home to us that oil, correctly and wisely used, is one of the most powerful agents we possess to combat loss of capacity in carbonizing plant, in gasholders, and in labour force.

In either case the quality of the gas mixture produced, in regard to its behaviour in the consumer's appliances, is likely to be noticeably affected and, for the sake of our future business and especially with the possibility of gas rationing, it is of vital importance that no change should be made until the necessary arrangements have been made to ensure that the value of the service of gas to the consumer is in no way impaired. (*To be continued*)

South-Eastern Gas Corporation

The Tenth Ordinary General Meeting of the South-Eastern Gas Corporation, Ltd., was held on June 25 at Gas Industry House, 1, Grosvenor Place, S.W. 1. Sir David Milne-Watson, Bt., LL.D., D.L., Chairman of the Company, presided.

The following statement by the Chairman was circulated to the shareholders, with the accounts for the year ended March 31, 1942:

A Direction and Order issued by the Board of Trade prevents me from giving any information as to the working of the subsidiary companies, and I can therefore only deal with the figures shown in the accounts of the Corporation.

Restricted Sales of Appliances

Taking the balance-sheet first, the comparative figures show that there are very few changes from the previous year. It will be noticed, however, that the sums deposited by subsidiary companies with the Corporation have increased from approximately £200,000 to £360,000. As the war has continued the sale of gas appliances to domestic consumers on hire-purchase has been restricted to an increasing extent. Before the war all our companies had large numbers of appliances on hire-purchase, and instalments for these have been coming in without a corresponding outlay on new hire-purchase business.

As a result of this some companies have money temporarily available which will, of course, be required immediately after the war to finance the great demand there will then be for gas appliances. I might say here that, in spite of the many changes caused by the war, most hire-purchase contracts have been faithfully observed, and where this has not been possible our companies have been able to make satisfactory arrangements with consumers.

The additional money received on deposit has enabled the Corporation to reduce the money on loan from other sources, and you will see that the next item in the balance-sheet, "Other deposits and temporary loans," has decreased by £95,000. On the other side of the account the loans to associated companies for development and other purposes have increased from £326,000 to £403,000.

The revenue account also shows very little change from last year. The income received from investments amounts to £194,289, a difference of only £5 from the previous year, while other income, which includes interest on temporary loans, is nearly £1,800 more. On the expenditure side, general expenses are £350 more and there is an increase of nearly £2,000 in the interest payable on loans and deposits. An alteration has been made in this year's revenue account to show the full income-tax liability of the Corporation. This amounts to £118,882, from which is deducted the tax recoverable from interest and dividends paid or payable.

After paying the usual Preference dividends and an interim dividend of 1½% on the Ordinary shares, and taking into account the balance of profit brought forward from last year, there is a sum of £132,806 available for distribution. Out of this the Directors recommend a final dividend of 2½%, less tax, on the Ordinary shares, making 4%, less tax, for the year. This will leave £69,588 to be carried forward. The Ordinary dividend of 4% is the same as was paid last year, and your Directors consider it very satisfactory that this rate can be maintained at a time when some of our companies are meeting with great difficulties.

Thanks to the Staff

Many employees of our associated companies and members of the head office staff are now serving with the Forces at home or overseas, and we wish them good fortune and a safe return. Where possible women have been engaged in their places, but it has been difficult to replace them all, and the loss of experienced workers has placed an extra burden on all those who remain in our service. The managers, staff, and employees of the whole group deserve our warmest thanks for the way in which they have carried on the work of the undertakings in spite of all difficulties. At the present time I can say little of the problems and emergencies which have had to be faced, but many of our consumers know and appreciate the success of the efforts made to ensure the continuous supply of gas in wartime, and I am sure that the goodwill thus gained will prove most valuable in days to come.

The report and accounts were adopted and the dividend approved.

The retiring Directors (the chairman and Mr. K. W. Hickman) were re-elected and Messrs Cash, Stone & Company were re-appointed as auditors.

A resolution was passed converting the issued shares of the Corporation into stock, and the proceedings closed with a vote of thanks to the Chairman, Directors, and staff.

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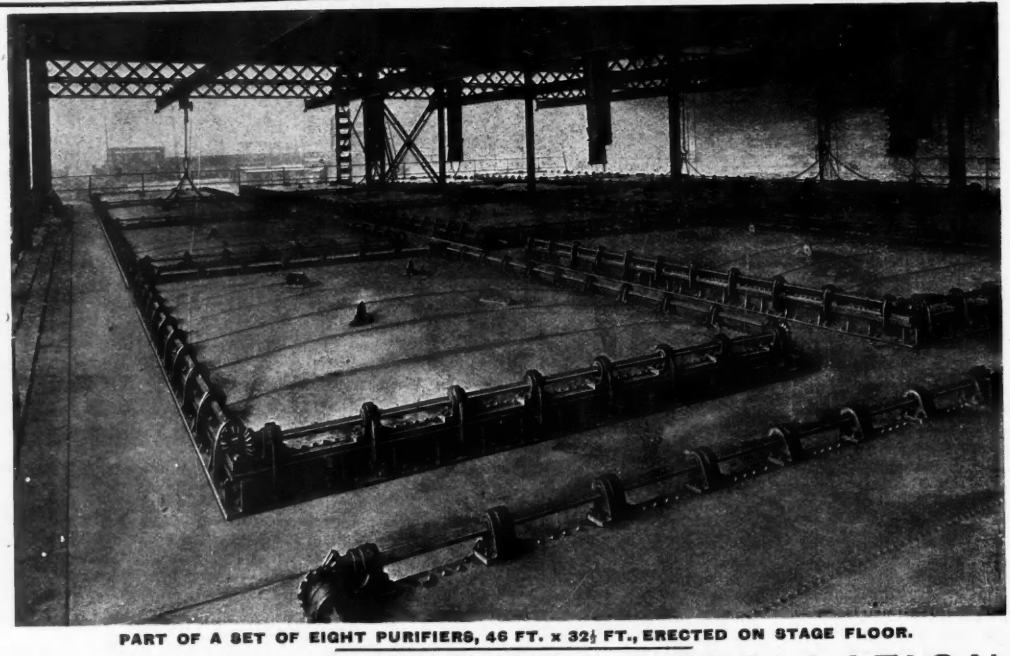

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Gas Products Prices

The London Market June 29.

The only change in the prices of Coal Tar Products in the London Market refers to 95/160 Solvent Naphtha, which is now about 2s. 3d. to 2s. 7d. per gallon.

The Provinces June 29.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 1s. to 1s. 4d. according to quality. Solvent naphtha, naked, North, 2s. 2d. to 2s. 6d. Heavy naphtha, North, 1s. 10d. to 1s. 11d. Carbolic acid, 60's, controlled by the Coal Tar Acids Prices (Inland) Order, 1942, operative from May 1. Naphthalene, controlled by the Naphthalene prices (Inland) Order, 1942, dated April 15, 1942, and operative from May 1) 1942, £19 to £19 10s.—bags free. Anthracene, controlled by the Anthracene Prices (Inland, Order, 1942, operative from May 1. Filtered heavy oil (min. gr. 1,080), 7¼d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d; timber preservation and other purposes 4¾d. to 6d. These prices apply as from May 13.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland June 27.

There is no change to record. Refined tar controlled. Value about 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6¾d. to 7d. per gallon; all *ex* Works in bulk. Cresylic acid is in good demand. Prices from 3s. 6d. to 5s. per gallon, *ex* Works, naked. Crude naphtha, 6½d. to 7d. Solvent naphtha: 90/160 grade, 2s. to 2s. 3d., and 90/190 Heavy Naphtha 1s. 9d. to 2s. per gallon. Pyridine: 90/160 grade, 13s. and 90/140 grade, 15s. per gallon.

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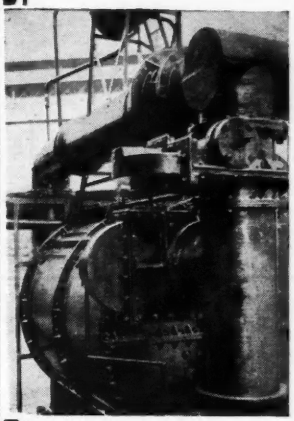

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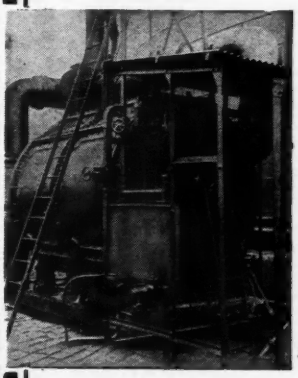

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GAS STOCKS AND SHARES

In view of the uncertainties of the Near Eastern position, the turnover in stock markets was smaller last week than for some time past. The Gas Market was no exception to the general conditions, although the section was by no means idle. The recent all-round appreciation in values has come to an end for the present, but it will be seen that several issues showed improvement last week, Montevideo heading the list with a gain of 5 points, and that for the most part the large increases recorded during the past few weeks have all been maintained.

The following quotations were changed during the week:

OFFICIAL LIST

Alliance & Dublin Ord.	95—100	+1	
British 4 p.c. Red. Deb.	77—82	+2	
Gas Light Units	12/9—13/9	—/3d.	
Imperial Continental Ord.	63—68	−2	
Montevideo	82—87	+5	
South Suburban 5 p.c. Deb.	107—112	+1	
United Kingdom 4½ p.c. Pref. (x.d.)	14/—16/—	June 22	
Wandsworth 5 p.c. Deb.	107—112	+1	
Watford Ord.	98—103	+1	

PROVINCIAL EXCHANGES

Chester 4 p.c. Cum. Pref. (x.d.)	79—81	June 15
Ditto 4 p.c. Non-Cum. Pref. (x.d.)	79—81	"
Ditto 3½ p.c. Deb. (x.d.)	78—82	"
Ditto 4 p.c. Red. Deb. (x.d.)	98—100	"
Liverpool Ord.	109—111	+2
Ditto 5 p.c. Red. Pref. (x.d.)	100—102	June 15
Newcastle Units	20/6—21/—	+—/3d.
Ditto 4 p.c. Pref.	93½—94½	+1

Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 25.
1,767,439	Mar. 9	5	5	Alliance & Dublin Ord.	95—100
374,000	Dec. 29	4	4	Do. 4 p.c. Deb.	95—100
957,608	May 11	5	5	Ascd. Gas & Water U'd'ts Ord.	16/—17/—
500,000	"	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	15/—17/—
535,545	"	4	4	Do. 4 p.c. Red. Cum Pref.	15/—17/—
336,646	"		4	Do. 4 p.c. Irred. Cum. Pref.	12/—14/—
561,370	Mar. 9	7	7	Barnet Ord. 7 p.c.	125—130
300,000	May 18	1/4⅜	1/9⅜	Bombay, Ltd.	18/6—20/6
690,407	June 15	7	7	Bournemouth 7 p.c.max. ...	125—130
362,025	Dec. 15		4	Do. 4 p.c. Deb. ...	90—95
659,955	Mar. 2	2½	3½	Brighton, &c., 5 p.c. Con. ...	69—74
855,000	" 16	6	6	Brit. Gas Light Ord.	72—77
545,000	Dec. 15	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	105—115
120,000	June 15	4	4	Do. 4 p.c. Red. Deb.	77—82
10,000	Nov. 6 '33	6	4	Cape Town, Ltd., 4½ p.c. Cu. Pf.	¼—¾
626,860	Feb. 2	6	6	Cardiff Con. Ord.	100—105
24,500	June 8	7	7	Colombo 7 p.c. Pref.	19/—21/—
764,169	Mar. 23	-/11.48	-/9.56	Colonial Gas Assn. Ltd. Ord. ...	¼—¾
400,000	"	1/3.30	1/3.298	Do 8 p.c. Pref. ...	¼—¾
1,748,935	July 22 '40	2	3	Commercial Ord.	35—40
620,000	June 8	3	3	Do. 3 p.c. Deb.	58—63
286,344	Feb. 16	5	5	Do. 5 p.c. Deb.	95—100
807,560	Feb. 23	6	6	Croydon sliding scale	95—100
644,590	"	5	5	Do. max. div.	82—87
620,385	Dec. 29	5	5	Do. 5 p.c. Perp. Deb. ...	109—114
179,500	Feb. 9	5	5	East Surrey 'B' 5 p.c.	70—75
176,461	Dec. 15	5	5	Do. 5 p.c. Deb. (Irred.)...	107—112
250,000	Nov 10	6	4	Gas Consolidation Ord. 'B' ...	15/—17/—
250,000	May 11	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6
19,122,910	July 29 '40	3⅜	4½	Gas Light & Coke Ord. ...	12/9—13/9a
2,600,000	"	3¼	3¼	Do. 3¼ p.c. max.	48—53
4,477,106	"	4	4	Do. 4 p.c. Con. Pref. ...	66—71
2,993,000	July 8 '40	3⅜	3⅜	Do. 3⅜ p.c. Red. Pref. ...	72—77
8,602,497	June 1	3	3	Do. 3 p.c. Con. Deb. ...	82—87
3,642,770	"	5	5	Do. 5 p.c. Red. Deb. ...	104—108
2,500,000	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	103—107
700,000	Mar. 9	3½	3½	Do. 3½ Red. Deb. ...	89—94
6,600,000	May 13 '40	4	8	Imperial Continental Cap. ...	63—68
43,820	Jan. 26	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95
231,978	Feb. 23	5	5	M.S. Utility 'C' Cons.	73—78
918,657	"	4	4	4 p.c. Cons. Pref.	78—83
675,000	May 4	†4	†4	Montevideo, Ltd.	82—87
300,000	April 27	9	7	Oriental, Ltd.	85—95
368,537	June 15	3½	2½†	Plymouth & Stonehouse 5 p.c.	65—70
621,667	Feb. 9	7½	7½	Portsmouth & Gosport Cons.	90—95
648,999	May 26	1/1½	1/1⅜	Severn Val. Gas Cor. Ld. Ord.	17/—19/—*
597,972	Mar. 9	4½	4½	Do. 4½ p.c. Cum. Pref. ...	16/6—18/6
2,528,714	June 8	1/—	7½	South East'n Gas Cn. Ld. Ord.	14/—16/—
1,000,000	Mar. 2	-/10⅛	-/10⅛	Do. 4½ p.c. Red. Cum. Pref.	16/—18/—
1,068,869	"	4	4	Do 4 p.c. Irred. Cum. Pref.	12/6—14/6
6,709,895	Aug. 5 '40	4	4	South Met. Ord.	58—63
1,135,812	"	6	6	Do. 6 p.c. Irred. Pref. ...	78—83
850,000	"	4	4	Do. 4 p.c. Irred. Pref. ...	60—65
1,895,445	Dec. 29	3	3	Do. 3 p.c. Perp. Deb. ...	78—83
1,000,000	Jan. 12	5	5	Do. 5 p.c. Red. Deb. ...	101—106
1,543,795	Feb. 9	4	4	South Suburban Ord. 5 p.c ...	78—83
512,825		5	5	Do. 5 p.c. Perp. Pref. ...	95—100
500,000	"	4	4	Do. 4 p.c. Perp. Pref. ...	76—81
250,000	"	3⅜	3⅜	Do. 3⅜ p.c. Red. Pref. ...	87—92
888,587	June 15	3	5	Do. 5 p.c. Perp. Deb. ...	107—112
750,541	Feb. 9	2	6	Southampton Ord.	70—75
350,000		5½	5½	Swansea 5½ p.c. Red. Pref. ...	95—100
1,076,495	"	5	5	Tottenham & District Ord. ...	85—90
338,555	"	5	5	Do. 5 p.c. Pref. ...	95—100
453,380	"	4	4	Do. 4 p.c. Perp. Deb. ...	85—90
1,247,505	June 8	4	†4	U. Kingdom Gas Cor. Ord. ...	15/—17/
1,085,952	Dec. 1	4	4	Do. 4½ p.c. 1st Cum. Pref. ...	16/—18/—
772,709	May 18	4½	4½	Do. 4 p.c. 1st Red. Cum.Pref.	15/6—17/6
745,263	"	4	4	Do. 4½ p.c. 2nd Non.Cum. Pf.	14/—16/—*
1,200,000	June 22	4½	4½	Do. 3½ p.c. Red. Deb. ...	89—94
380,608	Mar. 16	3½	3½	Uxbridge, &c., 5 p.c.	102—107
1,371,138	April 27	6⅝	6⅝	Wandsworth Consolidated ...	80—85
2,525,768	Feb. 2	4	4	Do. 4 p.c. Pref.	77—82
1,243,964	"	4	4	Do. 5 p.c. Deb.	107—112
383,745	June 15	5	5	Do. 4 p.c. Deb.	89—94
388,342	"	4	4	Watford & St. Albans Ord. ...	98—103
300,000	Mar. 2	5	5	Do. 3½ p.c. Red. Deb. ...	84—89
	June 8	3½	3½		

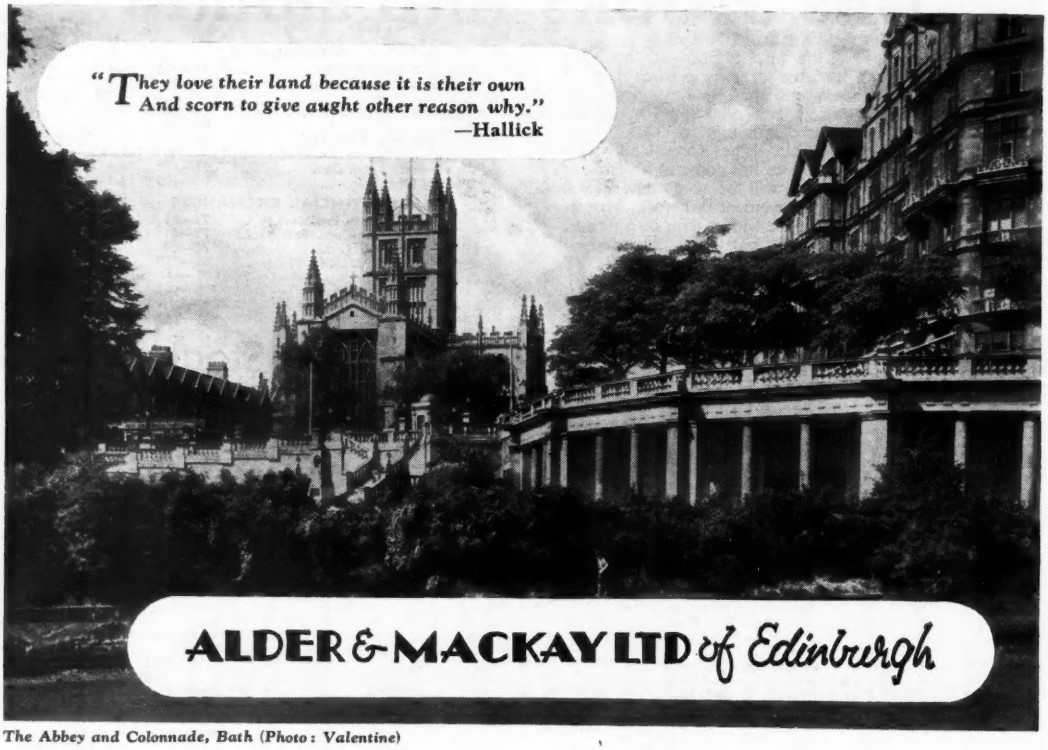
SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 25.
351,685	Juue 15	5	5	Brighton, &c., 5 p.c. Perp. Deb.	105—110
415,250	" 9	4	4	Bristol Gas Co., 4 p.c. New Deb.	95—100
140,205	Feb. 9	7	7	Cambridge, &c., 7 p.c. Cons. 'B'	130—140
295,932	Mar. 9	5	5	Cheltenham, 5 p.c. Cons.Ord....	95—100
42,500	June 15	4	4	Do. 4 p.c. Perp. Deb....	90—95
150,000	Feb. 23	4	4	Croydon Gas, 4 p.c. Pref. (Irr.)	78—83
130,000	Dec. 29	4	4	Do. 4 p.c. Deb. ...	85—90
146,700	Feb. 9	5½	5½	East Surrey, 5½ p.c. Pref. 'A' ...	85—90
53,220	" 10	6	6	Do. 6 p.c. Cum. Pref. ...	90—100
	Aug. 19 '40	6	4	Eastbourne, 'B' 3½ p.c.... ...	37—42
239,135	Nov. 17	5	5	Gas Consolidation 'A' Ord. (£1)	11/6—13/6
156,600	Feb. 23	5	5	Hampton C't, 5 p.c. Cons. Ord.	80—85
18,000	Dec. 29	3½	3½	Malta & Med'n., 7 p.c. 1st Pref.	45—55
10,845	June 30'41	3½	3½	Do. 7½ p.c. 2nd Pref.	35—45
50,000	Feb. 23	£5 4 6	£5 4 6	Mid. South. Util., 'A' Cons. 5 p.c.	70—80
65,000	April 27	5	5	North Middlesex, 5 p.c. Pref....	82—87
70,000	Mar. 9	5	5	Plymouth & Stone., 5 p.c. Deb.	103—108
76,501	Dec. 29	4	4	Reading, 4 p.c. Perp. Deb. ...	90—95
74,777	Mar. 31	4	4	Romford, 4 p.c. Debs. (Reg.) ...	90—95
21,000	June 15	5	5	Slough, 5 p.c. Perp. Deb. ...	100—105
211,740	"	5	5	Southampton, 5 p.c. Red. Deb.	95—100
363,575	Jan. 2	5	5	Tottenham, 5 p.c. Reg. Red. Mt.	102—105
202,019	April 7	—	7½	Tunbridge Wells, 4 p.c. Scale ...	95—100
135,257	June 15	5	5	Uxbridge &c., 5 p.c. Perp. Deb.	103—108

PROVINCIAL EXCHANGES

					Quotations June 19.
804,948	Mar. 2	5	5	Bath Cons.	98—101
122,577	Feb. 23	6	6	Blyth 5 p.c. Ord.	100—105
1,667,250	Feb. 23	5	5	Bristol, 5 p.c. max.	108—110
120,420	June 15	4	4	Do. 1st 4 p.c. Deb.	100—102
415,250	"	4	4	Do. 2nd 4 p.c. Deb. ...	99—101
328,790	"	5	5	Do. 5 p.c. Deb.	113—118
157,150	Feb. 2	5	6½	Chester 5 p.c. Ord.	97—100
92,500	June 15	4	4	Do. 4 p.c. Pref.	79—81
36,430	"	3½	3½	Do. 3½ p.c. Deb.	81—82
41,890	"	4	4	Do. 4 p.c. Red. Deb. ...	98—100
542,270	Feb. 9	6	9	Derby Cons.	112—117
55,000	Dec. 16	4	4	Do. 4 p.c. Deb.	75—80
10,000	Mar. 23	10	10	Great Grimsby 'A' Ord. ...	155—165
6,500	"	10	10	Do. 'B' Ord.	155—165
79,000	"	10	10	Do. 'C' Ord.	145—155
732,000	Feb. 23	4	4	Hartlepool G. & W. Cn. & New	71—73
2,167,410	Mar. 2	6	6	Liverpool 5 p.c. Ord.	109—111
245,500	June 15	5	5	Do. 5 p.c. Red. Pref. ...	100—102
306,083	Jan. 15	4	4	Do. 4 p.c. Deb.	99—101
20,000	June 23	5	5	Long Eaton 5 p.c. Pref.	9—11
80,000	"	5	5	Do. 5 p.c. Deb.	87—92
2,430,267	Feb. 9	5	5½	Newcastle and Gateshead Con.	20/6—21/—a
682,856	"	4	4	Do. 4 p.c. Pref.	93⅛—94½
776,706	Dec. 29	3½	3½	Do. 3½ p.c. Deb.	86½—87½
277,285	Nov. 3	5	5	Do. 5 p.c. Deb. '43 ...	99—101
274,000	March 17	5	5	Newport (Mon.) Ord.	86—89
13,200	Sept. 16	8⅝	7	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½
13,600	"	6	5	Do. 7 p.c. 'B'	9½—10½
40,000	"	5	6	Do. 7 p.c. 'C'	9½—10½
106,280	Feb. 9	10	10	Preston 'A' 10 p.c.	152—162
188,219	"	7	7	Do. 'B' 7 p.c.	111—121
1,806,339	Feb. 23	6½	6½	Sheffield Cons.	124—126
95,000	Jan. 5	4	4	Do. 4 p.c. Deb.	98—101
332,351	Feb. 16	6	6	Sunderland 6 p.c. max. ...	111½—112½
192,150	Feb. 9	5	5	Weston-super-Mare Cons. ...	94—98
64,338	Jan. 5	4	4	Do. 4 p.c. Deb.	85—90
33,340	"	7½	7½	Do. 7½ p.c. Deb.	140—145

a—The quotation is per £1 of Stock. * Ex. div. † Paid free of income-tax. †For year.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And scorn to give aught other reason why."
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CONTENTS

EDITORIAL NOTES

Gas Industry Development 55

Personal 56
Obituary 56
Letters to the Editor 56
1942 "JOURNAL" Directory 56

The Director-General in Wales .. 57
Development of the Industry 57
Saving Fuel 58
The Economics of Coal Blending .. 58
Cooking Appliances for Wartime Canteens 58
Canteens for War Workers 58

B.S. Test Code for Continuous Verticals 58
Discussion on Institution Papers .. 61

Gas Products Prices 71
Gas Stocks and Shares 71

THIS WEEK'S ADVERTISERS

	PAGE
Alder & Mackay, Ltd.	68
Ashmore, Benson, Pease & Co., Ltd.	45
Baldwins, Ltd.	45
Bale & Church, Ltd.	73
Blakeley, Firth, Sons & Co., Ltd....	74
Boulton Tubular Structures, Ltd....	72
Brotherhood, Peter, Ltd.	53
Clayton, Son & Co., Ltd.	42
Cowan, W. & B.	Cover III
Cox & Danks, Ltd....	50
Crossley-Premier Engines, Ltd. ...	50
Dempster, R. & J., Ltd.	41
Dempster, Robert, & Sons, Ltd.	60, 74
Donkin Co., Ltd. (The Bryan)	Cover II
Ellison Insulations, Ltd.	74
Frost, A. E.	74
Gas Meter Co., Ltd. ...	Cover IV
Gas Purification & Chemical Co., Ltd.	73
Glover, Thos., & Co., Ltd. ...	54
Grant & West, Ltd.	74
Grant, David, & Co.	51
Harris & Pearson, Ltd. ...	Cover IV
Harrisons (London), Ltd.	73
Head, Wrightson & Co., Ltd. ...	47
Hyde, Silas, Ltd.	76
Holmes, W. C., & Co., Ltd. ...	75
Humphreys & Glasgow, Ltd. ...	52
Jeavons, E. E., & Co., Ltd. ...	74
Jeavons Engineering Co.	47
Jobling, James A., & Co., Ltd. ...	49
Johnson, C. H., & Sons, Ltd. ...	49
Keith Blackman, Ltd.	76
King, Walter, Ltd.	73
Laidlaw, R., & Son (Edin.), Ltd....	42
Main, R. & A., Ltd.	66
Mavitta Drafting Machines Co., Ltd.	71
Mewburn, Ellis & Co.	74
National Fire Protection Co., Ltd.	72
Parkinson Stove Co., Ltd. ...	63
Parkinson, W., & Co.	54
Peebles & Co., Ltd.	51
Pegson, Ltd.	Cover II
Photostat, Ltd.	68
Radiation, Ltd.	64, 65
Reavell & Co., Ltd.	73
Siebe, Gorman & Co., Ltd. ...	73
Simon-Carves, Ltd.	43
Slingsby, Walter, & Co., Ltd. ...	71
Spencer (Melksham), Ltd. ...	73
Sternol, Ltd.	48
Strachan & Henshaw, Ltd. ...	74
Sutherland Meter Co., Ltd. ...	46
Trotter, Haines & Corbett, Ltd. ...	74
Visco Engineering Co., Ltd. ...	50
Wakelin, F. H., Ltd.	74
Walker, C. & W., Ltd.	48
West's Gas Improvement Co., Ltd.	70
Willey & Co., Ltd....	44
Wilson (George) Gas Meters, Ltd.	Cover I
Williamson Cliff, Ltd. ...	Cover IV
Woodall-Duckham Co.	59
Wright, Alex., & Co., Ltd. ...	46
Trade Cards	71
Appointment Wanted	74
Appointments Vacant	74
Contracts Open	74
Patent	74
Plant, &c.	74
Plant, &c., For Sale and Wanted...	74
Publications...	74

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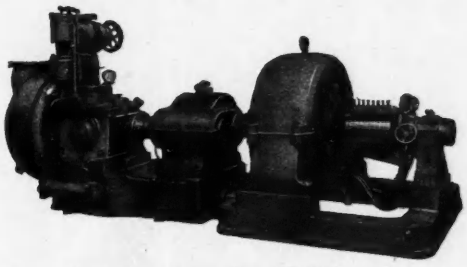

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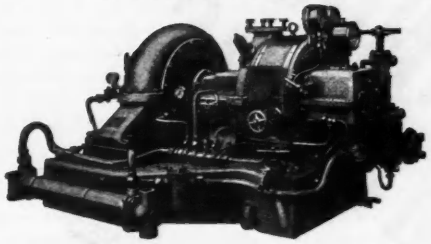

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